Chapter 8 - Turf

8.1 Purpose

Turf is a major asset in most developed parks. It provides a forgiving and resilient rug for recreational activities and is the traditional surface visitors associate with parks. Most developed parkland in the King County Park System contains significant amounts of turf. This turf receives varying amounts of wear and tear. Proper management must be given to ensure high-use areas like athletic fields and other manicured and general lawn areas can withstand their dedicated use.

8.2 Definitions

Turf: technical term applied to any lawn or grasses grown in a park or park facility.

8.3 Background

Turf areas vary widely in type of grasses used and in function from highly maintained athletic field to park meadows. Park turf includes lawns, athletic fields, native grasslands and meadows. Each type of turf requires distinct maintenance. The intensity of management ranges from very highly maintained athletic fields to less labor-intensive meadows and grasslands.

8.4 Design

The following are design considerations that improve the quality of turf plantings.

Construction Issues

- Turf areas should be constructed with a minimum slope of 2% to promote surface drainage and a maximum of 25% to allow riding mowers to safely access and mow the areas.
- If possible, soil should be amended with sand for a dry, well-drained surface. Well-drained turf allows easier and earlier maintenance, without damage.
- Trees, signposts, benches, garbage cans and other park features should be carefully placed in turf areas to reduce the need for hand trimming. If possible, amenities should be

on concrete pads or with rings of turf-free areas around them. Placement of these park features should consider irrigation over spray or obstruction to avoid wet spots that affect park users.

Plant Selection

Selection of grass species is based on site conditions, expected use, and maintenance standards. Sites with optimal growing conditions and high maintenance standards are seeded with blends of several species of grass. This mix allows those species adapted best to the conditions to colonize those areas best for them. Perennial Rye grasses are very wear-resistant and widely used for athletic fields. Kentucky Blue grass produces rhizomes that fill in thin areas and is used to help establish grass. Fescues do well in shaded areas and are part of general lawn mixes. Bent Grass is native, does well in wet conditions, but must be mown very short.

8.5 Maintenance Practices

The following guidelines apply to all King County Park System turf areas.

Mowing

Frequency. Generally, mowing is done weekly, especially during the growing season. The importance of regular mowing for promoting healthy turf cannot be over emphasized. Growth should be monitored and mowing frequency increased to avoid removing more than 1/3 of the leaf blade.

Cutting height. A mow height of 2 to 2 ½ inches promotes healthier turf than shorter cutting. Longer grass allows deeper rooting and shades out the weed seed germination zone. It also allows the desirable Blue Grass, Fescues, and Perennial Rye grasses to better compete with other species.

Mulch Mowing. Grass clippings should rarely be removed from mowed turf areas unless they are heavy and accumulation could smother the grass or create a tripping hazard. Plant nutrients and organic matter help develop healthy, productive root growth.

- Mowing patterns should be alternated to avoid compaction from mower wheels.
- Avoid mowing on frozen turf.
- Avoid mowing on wet ground where ruts can occur and remain. Walk the site during wet conditions and do a visual inspection before taking the mower onto the turf and determine if conditions will allow mowing without damage to the turf or soil surface.
- Remove litter and debris and fill holes and depressions.
- Mowers must be maintained regularly, especially sharpening and adjustment of cutting edges.
- Trimming should be coordinated with other mowing activities on the site.
- If mowing long grass generates clippings that must be removed for grass health reasons, take the clippings to a compost site for recycling.

Edging

- Turf is edged to give a finished look to lawn areas that border paved surfaces or planting areas. Edging is performed 1 to 4 times per year, based on the maintenance standards of the site.
- At high maintenance locations, such as swimming pools and community centers edging is more frequent.

Irrigation

- Monitor automatic irrigation effectiveness weekly. If turf is drying or too wet, alert the Irrigation Specialists to adjust the controllers.
- Apply 1 inch of water per week. The most desirable frequency is once per week if percolation rate and moisture holding capacity allow.
- During water shortages, all irrigation is suspended until the shortage ends. The only exception is athletic fields.

8.6 Cultural Care

The following BMPs apply to **high-class turf areas** within the King County Park System. Athletic fields, high-class lawn areas at pools and community centers, the historic area in Marymoor Park and new lawns receive the following care. All other turf areas are natural and require only supplemental irrigation in some locations.

Fertilization

- Soil test fertilized turf on a 2-year cycle.
- Turf fertilizer should be a 4-1-2 nitrogen, phosphoric acid, potash (NPK) unless otherwise indicated by soil tests. Winter fertilizer will have a lower percentage of the Nitrogen fraction.
- Each application should apply approximately 1lb actual Nitrogen/1,000 square feet.
- 50% of the Nitrogen fraction should be water insoluble slow-release.
- Avoid applications during heavy rainfall to avoid runoff.
- Cover any drain inlets in the area to be fertilized to prevent physical contamination of drainage water.
- Avoid applications in very hot weather.
- Be sure irrigation is operable before growing season applications.
- Mark sprinkler heads to avoid damage during application.

- Site-specific applications must be observed. Do not apply fertilizers within 50 feet of open watercourses and lakes in developed athletic fields and special areas. In all other park areas, a fertilizer free buffer area is maintained a minimum of 100 feet away from water.

Aeration

Only athletic fields and high compaction areas are aerated.

- Aerate at least two times per year using hollow tines.
- Best times to aerate are March, May, and September.
- Make at least two passes at right angles.
- Mark sprinkler heads to avoid damage during operation.

Top Dressing

Top dressing is done only to selected athletic fields and high-compaction areas on a 3-year cycle.

- Top dressing is 100% medium sand.
- Each application should be about ¼ inch.
- Fill all depressions and holes with an appropriate soil stockpiled on site.

Over-Seeding

Over-seeding is done regularly on all athletic fields and as needed on high-wear areas as a spot treatment.

- Over-seed entire area at least once a year.
- Over-seed in late summer.
- Over-seed at a rate of 4 lbs/1,000 square feet. Manually apply more heavily in very sparse areas and scarify by hand.
- Over-seed soccer sidelines in a manner that allows regrowth in areas worn by teams and spectators.

8.7 Site Standards

Steep Slopes

- Control grass growth mechanically with string trimmers.
- Spray with Embark™ or other turf growth regulators to reduce need for trimming. If growth regulators are used, do not mow during growth season after treatment is made.
- Consider leaving steep slopes un-mown.

- Consider replacing grass with groundcovers or clover. Add spring and summer bulbs.

Meadows

Meadows provide habitat for many animals.

- **Woody Plant & Fire Suppression:** Mow to suppress woody plants from invading, and to reduce fire hazards. One annual mowing controls woody plants and reduces fire hazard. Mow to about 4 inches height in July.
- **Reseeding:** Allow grasses to set seed.
- **Timing:** Schedule maintenance to minimize impacts on a bird nesting and habitation.

Soil-based Athletic Fields

These fields are generally composed of native soil found on-site with minimal soil amendment. The Recreation Section schedules athletic fields for regular baseball and soccer play. Some fields are irrigated; others are not.

Soil: Test soil for pH annually. Add lime as needed to ensure optimum nutrient intake.

Fertilization: Apply 4-1-2 NPK ratio at 2 to 4 lbs of Nitrogen/1,000 square feet each year in two to four applications.

Aeration: Should occur two to four times per year with a hollow tine aerifier. Remember to flag sprinklers.

Over-Seeding: Entire field should be over-seeded at least once per year at 4 lbs seed/1,000 square feet or about 300 lbs/soccer field. Heavy-wear areas should be scarified and seeded monthly or as needed during the growing season. Depressions should be filled with same soil as they occur.

Re-sodding and Rehabilitation: Repair deep depressions and bare areas by sod patches taken from the field perimeter during the non-growing season. Level and re-seed these areas. Restrict active use until turf is established.

Rotation of Fields: Combat extensive wear and tear by annually rotating fields and goals. This practice allows turf rehabilitation work and the reestablishment of grass in wear areas.

Mowing Height: 2 inches minimum.

Sand-Based Athletic Fields

These fields are entirely composed of imported sand. They are acknowledged for their outstanding drainage and can be played on when native soils become too muddy. It is important to keep players from wearing through the turf rug because sand ravels badly when exposed.

Irrigation: More frequently than on soil fields. Do not allow these fields to become too dry.

Fertilization: Apply 4-1-2 NPK ratio at 4 lbs of Nitrogen/1,000 square feet per year in four applications.

Aeration: Should occur two to three times a year with a hollow-tine aerifier.

Over-Seeding: Entire field should be over-seeded at least once per year at 4 lbs. of seed/1,000 square feet. Depressions should be filled as they occur. Be sure to use correct sand-based mix.

Re-sodding: Repair deep depressions and bare areas with sod patches taken from field perimeters during the non-growing season. Level and re-seed these areas.

Mowing Height: 2 inches minimum.

Bathing Beaches

Fertilization: Apply 4-1-2 NPK ratio at 3 lbs of Nitrogen/1,000 square feet per year in three applications. Do not apply fertilizer within 100 feet of water's edge. Do not apply fertilizer when heavy rains are either falling or predicted.

Aeration: Should occur at least once each year, using a hollow-tine aerifier.

Over-Seeding: Entire lawn areas should have worn areas over-seeded once a year with at least 4 lbs seed/1,000 square feet.

Mowing: To reduce geese problems, mowing should be done at a minimum of 4 inches high in a 50-foot buffer.

8.8 IPM

Thresholds

- Pesticides are not applied to park turf. Weeds, insect and disease pests are generally tolerated in all park turf.
- Turf pests are controlled through good cultural care. The public more readily accepts a pest than a pesticide.

Control Strategies

The following are IPM controls for turf.

Broadleaf Weeds

When control is necessary, the primary control is to follow these cultural practices:

- Careful monitoring of watering practice.
- Fertilization.
- Aeration.
- Top dressing.
- Over-seeding.

Woody Brush Control

Wood brush control in meadow areas is by mechanically mowing or hand pulling.

Insects

European Crane Fly does damage some turf in the King County Park System. It has not, however, reached an intolerable level. We do not use turf insecticide on turf.

Disease

Turf disease is tolerated in the King County Park System. Fungicides are not used.

Trimming Abatement

Controlling grass and vegetation is important along fence lines and other landscape features. Trimming looks good and reduces damage to park features. Grass trimming is accomplished in the following ways:

- Push mowers and string trimmers are used. This is very labor intensive, costly, and produces air pollution.
- Herbicide is used through annual applications of Roundup™ and Surflan™. These products are used for post and pre-emergent control.
- Concrete mow strips are recommended to eliminate ongoing use of herbicides. While this option is initially costly, it eventually reduces staff time.
- New products like the Waipuna™ water weeder are under consideration as options for reducing herbicide use. This machine kills grass and vegetation by "cooking" them with hot water injected into the soil by a wand.

8.9 Training

- All park resource staff should have training in basic turf management

Mow crews have site-specific information on mowing heights and patterns at each facility.